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## SPECIFICATION

Optical film having controlled scattering/transmitting characteristics

This application is a continuation of PCT International Application PCT/JP02/03760 with an international filing date of April 16, 2002 based on a priority application 2001-123389 filed in the Japanese Patent Office with a priority filing date of April 20, 2001.

### Technical Field

The present invention relates to an optical film with controlled light scattering characteristic and selectively P/S converting characteristic.

### Background Art

In a reflection type or transflection type liquid crystal display, generally, an incident light transmits through a liquid crystal layer, reflected by a reflective film, and transmits again through the liquid crystal layer, and then a display image gets into eyes of a viewer. At this time, by disposing a light scattering film on the surface side of the liquid crystal layer and/or between the liquid crystal layer and reflective film to scatter the light, the image can be recognized in a wide viewing angle. As these methods of scattering the light, there are representatively illustrated a method of scattering light by dispersing and containing transparent fine particles in a plastic film or an adhesive and a method of scattering light by roughening the surface of a plastic film.

To improve the brightness in the transmitting state of transmission or transflection, a reflective polarizer is widely used for converting P wave or S wave formed by the P/S change, which is caused by birefringence of liquid

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crystal, to S wave or P wave selectively by multiple reflection and thereby preventing loss of light.

However, when such reflective polarizer by which light is selectively P/S converted is used in a transflection type or reflective type liquid crystal display, in particular, there are problems that